AMENDMENT

Please amend the above-captioned application as follows:

In The Claims:

Please cancel claims 18 to 27, without prejudice.

Please amend the claims as follows:

1. (Currently amended) An isolated or recombinant nucleic acid comprising a sequence ~~as set forth in SEQ ID NO: 1 and variants thereof~~ having at least 70% identity to SEQ ID NO: 1 and encoding a polypeptide having polymerase activity ~~at a temperature in a range from about 90°C to 113°C~~.

2. (Currently amended) The isolated or recombinant nucleic acid of claim 28 ~~1~~, wherein the polymerase activity is retained at the temperature for four or more hours.

3. (Currently amended) The isolated or recombinant nucleic acid of claim 1, comprising a sequence as set forth in SEQ ID NO:1, ~~sequences substantially identical thereto,~~ and sequences complementary thereto.

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4. (Currently amended) An isolated or recombinant nucleic acid that hybridizes to a nucleic acid of claim 1 under conditions of high stringency.

5. (Currently amended) An isolated or recombinant nucleic acid that hybridizes to a nucleic acid of claim 1 under conditions of moderate stringency.

6. (Currently amended) An isolated or recombinant nucleic acid that hybridizes to a nucleic acid of claim 1 under conditions of low stringency.

7. (Currently amended) An isolated or recombinant nucleic acid having at least 70% sequence identity ~~homology~~ to the nucleic acid of claim 1 as determined by analysis with a sequence comparison algorithm.

8. (Currently amended) An isolated or recombinant nucleic acid having at least 80% sequence identity ~~homology~~ to the nucleic acid of claim 1 as determined by analysis with a sequence comparison algorithm.

9. (Currently amended) An isolated or recombinant nucleic acid having at least 90% sequence identity ~~homology~~ to the nucleic acid of claim 1 as determined by analysis with a sequence comparison algorithm.

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10. (Currently amended) An isolated or recombinant nucleic acid having at least 95% sequence identity ~~homology~~ to the nucleic acid of claim 1 as determined by analysis with a sequence comparison algorithm.

11. (Currently amended) The isolated or recombinant nucleic acid of claim 7, 8,9, or 10, wherein the sequence comparison algorithm is FASTA version 3.0t78 with the default parameters.

12 (Currently amended) An isolated or recombinant nucleic acid comprising at least 10 consecutive bases of a sequence as set forth in SEQ ID NO:1 ~~SEQ ID NOs: 1~~, at least 10 consecutive bases of a sequence having at least 70% identity to SEQ ID NO: 1 and encoding a polypeptide having a polymerase activity, or ~~sequences substantially identical thereto, and~~ sequences complementary thereto.

13. (Currently amended) An isolated or recombinant nucleic acid having at least 70% sequence identity ~~homology~~ to the nucleic acid of claim 12 ~~11~~ as determined by analysis with a sequence comparison algorithm or FASTA version 3.0t78 with the default parameters.

14. (Currently amended) An isolated or recombinant nucleic acid having at least 80% sequence identity ~~homology~~ to the nucleic acid of claim 13 ~~11~~ as determined by analysis with a sequence comparison algorithm or FASTA version 3.0t78 with the default parameters.

15. (Currently amended) An isolated or recombinant nucleic acid having at least 90% sequence identity ~~homology~~ to the nucleic acid of claim 14 ~~11~~ as determined by analysis with a sequence comparison algorithm or FASTA version 3.0t78 with the default parameters.

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16. (Currently amended) An isolated or recombinant nucleic acid encoding a polypeptide having a sequence as set forth in SEQ ID NO: 2, and sequences substantially identical thereto.

17. (Currently amended) An isolated or recombinant nucleic acid encoding a polypeptide comprising at least 10 consecutive amino acids of a polypeptide having a sequence selected from the group consisting of SEQ ID NO: 2, and sequences substantially identical thereto.

18 to 27. (Currently canceled, without prejudice)

Please add the following new claims:

28. (NEW) The isolated or recombinant nucleic acid of claim 1, wherein the polypeptide has a polymerase activity at a temperature in a range from about 90°C to 113°C.

29. (NEW) The isolated or recombinant nucleic acid of claim 1, wherein the polypeptide has a polymerase activity at a temperature up to 150°C.

30. (NEW) The isolated or recombinant nucleic acid of claim 1, wherein the polymerase activity comprises a DNA polymerase activity.

31. (NEW) The isolated or recombinant nucleic acid of claim 1, wherein the polymerase activity comprises a 3'-5' exonuclease activity.

32. (NEW) The isolated or recombinant nucleic acid of claim 1, wherein the polymerase activity lacks a 3'-5' exonuclease activity.

33. (NEW) The isolated or recombinant nucleic acid of claim 1, wherein the polypeptide has a polymerase activity in high salinity conditions.

34. (NEW) A method for amplifying a nucleic acid comprising using a polymerase as set forth in claim 1.

35. (NEW) The method of claim 35, wherein the amplification reaction is a polymerase chain reaction (PCR).

36. (NEW) The isolated or recombinant nucleic acid of claim 1, wherein the nucleic acid further comprises an expression vector.

37. (NEW) The isolated or recombinant nucleic acid of claim 1, wherein the expression vector comprises a viral particle, a baculovirus, a phase, a plasmid, a cosmid, a fosmid, a bacterial artificial chromosome, a viral DNA or a P1-based artificial chromosome.

38. (NEW) A method for identifying functional polypeptide fragments or variants encoded by fragments of SEQ ID NO:1, and sequences as set forth in claim 1, that retain the polymerase function of the polypeptide of SEQ ID NO: 2, and sequences substantially identical thereto, said assay comprising:

utilizing a polypeptide encoded by a nucleic acid having at least 70% sequence identity to SEQ ID NO: 1, and sequences substantially identical thereto, or polypeptide fragment or variant encoded by SEQ ID NO: 1, to effect DNA polymerase activity in a PCR amplification at extreme high temperature for four or more hours and under conditions that allow said polypeptide or fragment or variant to function, and

detecting formation of an amplification product, wherein formation of the amplification product is indicative of a functional DNA polymerase polypeptide or fragment or variant.